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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,134	12/04/2001	Catherine M. Payne	60937-123-US	3734
24341	7590	07/27/2004	EXAMINER	
MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE PALO ALTO, CA 94306			MALDONADO, JULIO J	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/007,134

Applicant(s)

PEYNE ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 32-49 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-9 and 32-49 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9 and 32-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata et al. (U.S. 5,846,695) in view of Honda et al. (U.S. 5,798,323).

In reference to claims 1-7, 32-37, 40-42 and 45-47, Iwata et al. teach a composition for removal of etch residues from a semiconductor integrated circuit surface using copper materials which comprises a 0.01 percent by weight to 20 percent by weight of a choline hydroxide, and water (column 1, line 38 – column 4, line 25). Also, Iwata et al. discloses advantages of using a sugar or a sugar alcohol and disadvantages of omitting them from the composition. It would have been obvious to one of ordinary skill in the art at the time the invention was made to omit the sugar or sugar alcohol from the composition with the expectation of disadvantages, since Iwata et al. do not teach that the invention would not be inoperable. Although not taught as a preferred embodiment, Iwata et al. teach this embodiment nonetheless, and disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley,

31 USPQ2d 1130, 1132 (Fed. Cir. 1994). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). Even a teaching away from a claimed invention does not render the invention patentable. See *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998), where the court held that the prior art anticipated the claims even though it taught away from the claimed invention. "The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed." To further clarify, a prior art opinion that a claimed invention is not preferred for a particular limited purpose, does not preclude utility of the invention for that or another purpose, or even preferability of the invention for another purpose.

Iwata et al. fail to teach that the organic compound comprises an organic solvent comprising dimethyl sulfoxide or propylene glycol. However, Honda et al. teach a cleaning composition for removal of etch residues in a semiconductor integrated circuit surface including an organic solvent, comprising dimethyl sulfoxide or propylene glycol at a concentration from about 5 percent to about 50 percent by weight of the organic solvent (column 4, line 40 – column 5, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Iwata et al. and Honda et al. to include an organic solvent as taught by Honda et al. in the composition of Iwata et al., and furthermore, since it would allow the

removal of photoresist residues from the semiconductor surface (column 5, lines 24 – 32).

The combined teachings of Iwata et al. and Honda et al., fail to expressly teach wherein the composition comprises from greater than 20 percent by weight to about 50 percent by weight of choline hydroxide. However, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the concentration ranges as disclosed by Iwata et al. to obtain the same properties as those properties obtained by using the concentration ranges of the claimed invention.

The combined teachings of Iwata et al. and Honda et al. fail to teach wherein the composition comprises 20 percent by weight to about 80 percent by weight of the organic solvent. However, in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. See MPEP 2144.05. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the concentration ranges disclosed by Honda et al. to arrive to the claimed invention.

The combined teachings of Iwata et al. and Honda et al. fail to expressly disclose wherein the composition comprises from about 10 percent by weight to about 80 percent by weight of water. However, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to use the above-mentioned water concentration to arrive at the claimed invention since the selection of the claimed concentration range is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species to obtain a desired composition.

In reference to claims 8, 38 and 48, the combined teachings of Iwata et al. and Honda et al. teach wherein the composition additionally comprises hydroxylamine (Iwata et al., column 3, lines 47 – 64).

In reference to claims 9, 39, 44 and 49, the combined teachings of Iwata et al. and Honda et al. teach wherein the composition comprises about 1 percent by weight to about 80 percent of the hydroxylamine (Iwata et al., column 4, lines 4 – 9); and wherein the composition additionally comprises 0.1 to 4 percent by weight of a corrosion inhibitor (Honda et al., column 5, lines 24 – 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a corrosion inhibitor as taught by Honda et al. in the composition of Iwata et al., and furthermore since it would prevent corrosion of surfaces (e.g., metal surfaces) without reduction of cleaning rate of the composition (Honda et al., column 5, lines 46 – 58).

The combined teachings of Iwata et al. and Honda et al. fail to teach wherein the composition comprises 2 to about 12 percent by weight of the hydroxylamine; and wherein the composition comprises 0.5 to about 5 percent by weight of the corrosion inhibitor. However, in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. See MPEP

2144.05. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the concentration ranges disclosed by Honda et al. to arrive to the claimed invention.

### ***Response to Arguments***

3. Applicant's arguments filed 04/26/2004 have been fully considered but they are not persuasive.

Applicants argue, "...Honda explicitly teaches away from the use of quaternary ammonium hydroxide (e.g., TMAH) because of particular disadvantages associated with such use and teaches not to use any quaternary ammonium hydroxide compound due to these disadvantages. More specifically, Honda discloses that compositions containing tetramethylammonium hydroxide (TMAH), a quaternary ammonium hydroxide, attack aluminum, thereby etching away an aluminum oxide residue (column 1, lines 63-65)...". In response to this argument Honda et al. teach "...Several different chemistries have been identified for removing the post-etch residues, particularly the metal oxide type. For example, alkaline aqueous developers such as those containing tetramethylammonium hydroxide (TMAH) are known to attack aluminum. Thus, an aluminum oxide residue can be etched away with TMAH. However, other types of the post-etch residues associated with multi-metal systems such as Al/Si/Cu cannot be so easily removed with TMAH. TMAH also is ineffective on residues from polysilicon plasma etch processes..." (Honda et al., column 1, line 61 – column 2, line 3). Honda et al. do not teach, "not to use any quaternary ammonium hydroxide compound due to these disadvantages" as argued. Furthermore, Honda et al. mention certain

disadvantages of using alkaline aqueous solutions on certain environments that are not claimed in the invention. Furtherstill, the claimed invention doesn't recite using TMAH (tetramethylammonium chloride) and Honda et al. was not used upon such limitation.

Also, applicants argue, "...Honda also teaches away from the use of hydroxylamine in stripping compositions, especially when used under high temperatures or in a highly alkaline medium (col. 2, lines 11-24)...". In response to this argument, Honda et al. teach "...Although hydroxylamine has a potential to enhance the stripability and/or the metal corrosion inhibitor, it is not stable upon heating. Therefore, the use of hydroxylamine is not recommended, especially when used in a highly alkaline medium...Accordingly, hydroxylamine is not suitable for use in stripping of photoresist films or cleaning of the post-etch residues at higher temperatures..." (Honda et al., column 2, lines 16 – 24). Also, Honda et al. teach, "...the present invention is preferably free of hydroxylamine compounds such as hydroxylamine or N,N-diethylhydroxylamine..." (Honda et al., column 5, lines 21 – 23). Therefore, although not taught as a preferred embodiment, Honda et al. teaches this embodiment nonetheless, and disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. Merck & Co. v.



Biocraft Laboratories, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). Even a teaching away from a claimed invention does not render the invention patentable. See *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998), where the court held that the prior art anticipated the claims even though it taught away from the claimed invention. "The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed." To further clarify, a prior art opinion that a claimed invention is not preferred for a particular limited purpose, does not preclude utility of the invention for that or another purpose, or even preferability of the invention for another purpose.

Also, applicants argue, "...one of skill in the art would have no idea how sugar and/or sugar alcohol would affect a dielectric material, as recited in amended independent claims 1, 32, and 40...". In response to this argument, such recitation has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

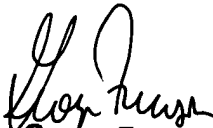
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329.

Updates can be found at <http://www.uspto.gov/web/info/2800.htm>.

Julio J. Maldonado  
July 14, 2004

Julio J. Maldonado  
Patent Examiner  
Art Unit 2823

  
George Fournier  
Primary Examiner